CLAIMS

1. A reinforced fluoropolymer plate comprising a layer of fluoropolymer on one of its faces, and a sheet of carbon fibers on the other face, at least part of the sheet of carbon fibers being impregnated with fluoropolymer.

2. The plate as claimed in claim 1, in which the polymer-impregnated thickness represents at least 10% of the thickness of the sheet of carbon fibers, preferably 10% to 90%, advantageously 30 to 70%.

3. The plate as claimed in claim 1 or 2, in which the fluoropolymer is chosen from the group consisting of polychlorotrifluoroethylene (PCTFE), polyvinylidene fluoride (PVDF), copolymers of tetrafluoroethylene and perfluoropropene (FEP), copolymers of tetrafluoroethylene and perfluoropropylvinylether (PFA), copolymers of tetrafluoroethylene and ethylene (ETFE), polymers of trifluorochloroethylene and ethylene (E-CTFE) and blends thereof.

4. The plate as claimed in one of claims 1 to 3, in which the fluoropolymer is the copolymer of tetrafluoroethylene and hexafluoropropylene (FEP).

5. The plate as claimed in one of claims 1 to 4, of which the total thickness lies between 1 and 20 mm, preferably 2 to 5 mm.

6. The plate as claimed in one of claims 1 to 5, in which the sheet of carbon fibers is in the form of a woven or nonwoven sheet, preferably in the form of a sheet of crossed carbon fibers.

7. The plate as claimed in one of claims 1 to 6, in which the sheet of carbon fibers has a thickness of between 0.1 and 10 mm, preferably 0.5 to 3 mm.

8. The plate as claimed in one of claims 1 to 7 comprising:
- a layer of fluoropolymer on one of the faces of the plate,
- a layer of carbon fibers free from fluoropolymer on the other face of the plate, and
- a central layer consisting of carbon fibers impregnated with fluoropolymer.

9. The use of the plate as claimed in one of claims 1 to 8 for the production of floating linings for reactors, tanks and pipework intended to be in contact with acidic and/or superacidic corrosive media.

10. A floating lining comprising a plurality of plates as claimed in one of claims 1 to 8, said plates being butt-welded together.

11. A reactor comprising:

- an inner metal wall, and
- a floating lining as claimed in claim 10, situated on all or part of the inner wall of the reactor, the face of the lining comprising carbon fibers free from fluoropolymer being positioned against the inner metal wall of the reactor.

12. The reactor as claimed in claim 11, additionally comprising:

a plurality of orifices in the inner wall, connected to a network of pipes;

a pressure-regulating device connected to the network of pipes maintaining the pressure inside the space between the fluoropolymer layer and the lower inner wall at the pressure existing inside the reactor.

13. A reactor comprising an inner wall, comprising one or more plates as claimed in one of claims 1 to 8, reinforced with a layer made of composite resin material and carbon fibers.

14. The reactor as claimed in claim 13 comprising, around the inner wall, an additional, noncontiguous outer metal jacket.

15. A method for producing the plates as claimed in one of claims 1 to 8 comprising:

- bringing the sheet of carbon fibers into contact with the fluoropolymer;
- melting one face of the fluoropolymer plate; and
- pressing the polymer until cool.

16. The production method as claimed in claim 15, wherein:

- one face of the fluoropolymer plate is brought into contact and melted by extruding said fluoropolymer onto the sheet of fibers.

17. A method for producing a reactor as claimed in one of claims 1 to 12, provided with a floating lining as claimed in claim 10, comprising:

- providing at least one plate as claimed in one of claims 1 to 8;
- cutting out and forming this plate inside a metal reactor, the face covered with carbon fiber fabric being in contact with the metal wall of the reactor;
- where appropriate, butt-welding the cut-outs of said at least one plate.

18. A method for producing a reactor as claimed in claim 13, comprising:
- providing at least one plate as claimed in one of claims 1 to 8;
- cutting out and forming this plate on a former, the face made of fluoropolymer being in contact with the former;
- where appropriate, butt-welding the cut-outs of said at least one plate;
- applying at least one layer of composite material and carbon fibers to said free face and then polymerizing the composite material.

19. A fluorination method in the liquid phase, in which said reaction is performed in a reactor as claimed in one of claims 11 to 14.

20. The fluorination method as claimed in claim 19, in which the temperature lies between 60 and 150°C.